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ABSTRACT

This document reports on the Iowa Department of Public Instruction plan to integrate energy education into elementary and secondary programs. This plan includes the development of energy conservation activity packets. The packets contain a variety of interdisciplinary activities, accompanying worksheets, visuals, and annotated children and teacher bibliographies for grades K-6. Also included in the plan is the Mankato State University Energy Program which is designed to acquaint teachers with some classroom projects that can be done by students in grades 7-12, and give teachers an extended classroom project in which students evaluate the energy consumption of their school. Finally, this report presents the results of a questionnaire designed to assess the present energy programs and perceived energy needs of Iowa secondary school teachers. The dominant concerns of the teachers surveyed were energy conservation and the political and social aspects of energy problems. (BB)

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ENERGY CONCEPTS IN THE IOWA SCHOOL CURRICULUM

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October, 1978

SE 025 042

ENERGY CONCEPTS IN THE IOWA SCHOOL CURRICULUM

- A National Problem

Public school energy costs have soared nationally 150 percent since 1972-73. According to Educational Facilities Laboratories (EFL), that represented a $50 expenditure per student during the 1977-78 academic year.[1]

"School energy costs have doubled in the past 5 years... Districts surveyed reported hikes ranging from 35 percent to over 400 percent, the average being 110 percent."[2]

It appears that Americans do not yet believe that there is a serious energy problem, despite exhortations of the President and the effects of the Arab oil embargo.

Schools should be a part of a general information program to clarify the problem, explain government programs, and identify the impact of both on schools, students and teachers.[3]

From a 1975 National Assessment of Educational Progress (NAEP) study concerning energy questions, it was apparent that most students' knowledge of energy concepts is declining at a time when the reverse should be true.[4]

The present science curriculum provides many places to insert energy education concepts. However, it appears that it is time for a systematic integration of energy education into the K-12 curriculum.

David Kuhn stated that regardless of the model, certain elements should characterize any education program.

1. Energy Education should be interdisciplinary.
2. Energy Education should relate to the everyday life of students.
3. Energy Education should consider attitudes, values, and decision-making.
4. Energy Education should be future-oriented and stress alternatives.

Iowa

- Energy Conservation Activity Packets (ECAP's)

In Iowa, efforts are being made to improve energy education for grades K-12. In 1977, the Iowa Department of Public Instruction (DPI) in conjunction with the Iowa Energy Policy Council (IEPC) developed the Energy Conservation Activity Packets (ECAP's). ECAP's contain a variety of interdisciplinary activities, accompanying worksheets, visuals, and annotated children and teacher bibliographies for grades K-6. It correlates energy and environmental education. The materials are housed in separate three-ring binders according to grade level. ECAP's are unique in that they were designed to aid teachers in encouraging development of a conservation ethic within students while simultaneously clarifying student values. Since values tend to reflect how individuals utilize time and energy, the process of values clarification can lead students from confusion, or apathy, to becoming concerned, positive, purposeful citizens of tomorrow.

- Mankato State University Energy Program

The Iowa Department of Public Instruction and the Iowa Energy Policy Council would like to extend energy education beyond grade 6 to include grades 7-12.

In June 1978, Mankato State University conducted an energy workshop entitled "A Classroom Project: Energy Efficiency of School Buildings." The workshop was sponsored by the U. S. Office of Energy and served two purposes:

1. Acquaint teachers with some classroom projects that can be done by students.
2. Give the teachers an extended classroom project to be completed by February 1979 in which students thoroughly evaluate the energy consumption of their school.

Forty high school science and/or math teachers from Minnesota, North Dakota, South Dakota, Wisconsin and Iowa were selected for the 5-day program.

Beginning in the fall of 1978, the 13 Iowa teachers will introduce their students to the concepts and processes of assessing the energy consumption of their buildings. After gathering data and evaluating the problem, students will seek solutions to the problem and/or suggest improvements.

- DPI Energy Assessment

In the spring of 1978, the Iowa DPI attempted to assess the present energy programs and perceived energy needs of 700 secondary Iowa social studies, science, industrial arts, and home economics teachers. Three hundred fifty forms were completed and returned (Figure 1). In addition, the energy status and needs of schools were compiled by school district size. [Size (1) up to 500; (2) 500-749; (3) 750-999; (4) 1000-1499; (5) 1500-1999; (6) 2000-2999; (7) 3000+].

From Table 1 it can be seen that the dominant concerns of the teachers surveyed were in the areas of (1) Energy Conversion and (2) Political/Social Aspects of Energy Problems.

Although there were some inconsistencies by discipline and school district size, the amount of agreement was significant. (Tables 2, 3)

Regardless of subject matter or school district size, most teachers surveyed felt that the most effective resources for teaching energy concepts were audiovisual aids, newspapers, and library materials.

The dominant written materials format preferred was the concept, objective, activities guides. ALL school districts except Size 5 and 7 also preferred concept, objective, activities guides as the dominant format.

In the area of A-V materials format, films were unanimously preferred by all disciplines and school district sizes. Filmstrips were second choice in most disciplines and school districts regardless of size.

In the area of inservice format, university/DPI short courses and summer programs were dominant both by discipline composite and school district size.

- Iowa Energy Policy Council

  In September 1978, the Iowa EPC awarded a one-year, $20,000 grant to the University of Iowa (Dr. Doris Simonis - Principal consultant)

FIGURE 1

State of Iowa
DEPARTMENT OF PUBLIC INSTRUCTION
Curriculum Division
Grimes State Office Building
Des Moines, Iowa 50319

Curr-ES
Due Date: May 5

ENERGY ASSESSMENT

Please circle your major teaching area.

Home Ec. *Ind. Arts*

Science *Social Studies*

In the left column please indicate availability of materials in your present energy program for each item using the rating scale. In the right column indicate your perceived energy program material needs for each item.

1	2	3	4	5
None	Very Little	Some	Quite a Bit	A Great Deal

AVAIL.	NEEDS	
		1. Basic Energy Concepts
_____	_____	a. Energy forms (kinds of energy)
_____	_____	b. Energy uses
		2. The Energy System
_____	_____	a. Energy flow
_____	_____	b. Energy demand
_____	_____	c. Present supplies
_____	_____	d. Distribution
_____	_____	e. Future systems
		3. Energy Conversion
_____	_____	a. Solar technology
_____	_____	b. Nuclear technology
_____	_____	c. Research and development technology
_____	_____	d. Fossil fuel technology
_____	_____	e. Bio-energy technology
_____	_____	f. Hydrocarbon technology
_____	_____	g. Wind
_____	_____	h. Geothermal
_____	_____	i. Tidal forces
_____	_____	j. Wave action
_____	_____	k. Ocean temperature gradient
_____	_____	l. Other energy sources
		4. Energy Conservation Areas
_____	_____	a. Residential
_____	_____	b. Transportation
_____	_____	c. Industrial
_____	_____	d. Institutional (school-hospital-etc.)
_____	_____	e. Commercial
		5. Political/Social Aspects of Energy Problems
_____	_____	a. Value decisions
_____	_____	b. Trade offs
_____	_____	c. Energy legislation
_____	_____	d. Life-styles
_____	_____	e. Conservation practices

Please rate each of the types of educational resources according to how you feel they meet your needs.

1	2	3	4	5
None	Very Little	Some	Quite a Bit	A Great Deal

6. Educational Resources
   _____ a. Textbooks
   _____ b. Films and other audio visual materials
   _____ c. Public television programming
   _____ d. Department of Energy publications
   _____ e. Commercial kits
   _____ f. Case studies
   _____ g. Laboratory experiments
   _____ h. Newspapers
   _____ i. Public utility pamphlets
   _____ j. Library materials
   _____ k. University developed programs
   _____ l. Energy units from sources not listed above
   _____ m. Other

7. Please name one or two energy resources that you consider most useful.

Please rate each of the supplementary materials items as to the desirability of their format.

8. Written Materials
   _____ a. Concept-objectives-activities guide
   _____ b. Publisher materials
   _____ c. Case studies
   _____ d. Other (Please specify)

9. Audiovisual materials
   _____ a. Films
   _____ b. Film loops
   _____ c. Filmstrips
   _____ d. Transparencies
   _____ e. Cassette tapes
   _____ f. Other (Please specify)

10. Inservice
    _____ a. Summer program
    _____ b. Academic year
    _____ c. University/DPI short course
    _____ d. Other (Please specify)

Please share any additional comments you may have regarding your energy program needs.

Please return questionnaire to: Jack A. Gerlovich, Curriculum Division, Department of Public Instruction, Grimes State Office Building, Des Moines, Iowa 50319.

ITEM	Availability(A) of present materials	Needs(N)	Valid Cases	N-A
Energy Conversion				
Solar	2.329	3.695	248	1.399
R & D	1.996	3.350	238	1.374
Bio Energy	1.815	3.221	239	1.431
Tidal	1.748	3.040	240	1.317
Ocean Thermal Gradient	1.650	2.946	236	1.305
Political/Social Aspects of Energy Problems				
Value Decisions	2.245	3.642	237	1.414
Trade-offs	1.950	3.280	228	1.346
Energy Legislation	2.133	3.461	236	1.322
Life-styles	2.305	3.667	237	1.388

1 ——— 2 ——— 3 ——— 4 ——— 5

None Very little Some Quite a bit A great deal

TABLE 1. Dominant Energy Concerns of Secondary Social Studies, Science, Industrial Arts, Home Economics Teachers Surveyed (Composite)

TABLE 2. Dominant Energy Concerns by Discipline
(Rank Ordered by Category)

Item	Science	Home Economics	Industrial Arts	Social Studies
Energy Systems				
Distribution	2	*	*	*
Future Systems	1	1	1	1
Energy Conversion Technology				
Solar	8	1	3	4
Nuclear	10	*	*	10
R & D	3	2	2	5
Fossil Fuel	11	*	*	*
Bio Energy	1	*	1	8
Hydrocarbon fuel	9	*	*	9
Wind	4	*	4	7
Geothermal	7	*	*	6
Tidal	5	*	*	1
Wave Action	6	*	5	2
Ocean Thermal Gradient	2	*	*	3
Energy Conservation Areas				
Residential	4	1	3	2
Transportation	3	2	2	5
Industrial	1	*	1	4
Institutional	*	*	*	1
Commercial	2	*	*	3
Political/Social Aspects of Energy Problems				
Value Decisions	2	1	1	4
Trade-offs	4	4	4	2
Energy Legislation	3	5	3	1
Life-styles	1	3	2	3
Conservation Practices	5	2	*	5

*Not a significant concern within this discipline.

TABLE 3. Educational Resource Effectiveness by Discipline

Item	Science	Home Economics	Industrial Arts	Social Studies
Books	5	*	2	5
A-V	1	1	1	2
Public T.V.	4	*	*	3
Lab Experiments	*	*	3	*
Newspapers	2	2	*	1
Library Materials	3	*	*	4
Written Materials				
Concept, Objective, Activities Guide	1	*	*	*
Publishers Materials	2	*	*	*
A-V Materials Format				
Films	1	1	1	1
Filmstrips	2	2	*	*
Transparencies	*	4	2	2
Cassette Tapes	*	3	*	*
Inservice Format				
Summer Programs	2	*	*	*
University/DPI Short Course	1	*	*	*

*Not a significant concern within this discipline.

An advisory committee composed of secondary science, industrial arts, home economics, and social studies teachers, AEA consultant, DPI consultant, EPC advisor, and the University of Iowa principal consultant has been appointed. Information from the DPI energy assessment may provide assistance in the development of some practical, effective energy materials.

Teachers who have already developed classroom activities centered on energy concerns, and who would like to share them with other teachers may send them to Dr. Doris Simonis, Science Education Center, University of Iowa, Iowa City, Iowa 52242.

Summary

Energy education is challenging. It is the hope of the Iowa DPI that articulated energy materials can be developed that will be reflective of the identified needs and also complementary to the K-6 ECAP materials.

> "By helping young people understand the possible results of the forces at work in today's world, by having them consider the range of consequences of today's actions, by allowing them to examine the possible outcomes of today's attitudes and beliefs, by confronting them with difficult but necessary choices we help them not only to envision what tomorrow might be, but also to understand how they can participate in creating the best of all possible tomorrows."[6]

The full survey follows.

If you have questions about the survey contact:
Dr. Jack A. Gerlovich, Science Consultant, Iowa Department of Public Instruction, Grimes State Office Building, Des Moines, Iowa 50319, phone: (515) 281-3249.

Footnotes

1. School Energy Costs Climbing, Education Digest. March 1978, Vol. , p. 67.

2. Howard, C. "Spiraling Energy Costs Bite into School Budgets," DPI Dispatch. Sept. 1978, Vol. 8, No. 1, p. 1. Iowa Department of Public Instruction, Des Moines, Iowa.

3. Ryon, J. Guest Editorial, Energy & Education, Vol. 1, 3. Feb. 1978. National Science Teachers Association, Washington, D.C., p. 1.

4. Selected Results From the National Assessments of Science: Energy Questions. National Assessment of Educational Progress Science Report No. 04-3-01. May 1975. Education Commission of the States, Denver, Colorado.

5. Kuhn, D. J. Teaching the Energy Lesson, The Science Teacher. Sept. 1978, Vol. , pp. 32-34. National Science Teachers Association, Washington, D.C.

6. La Conte, R. Teaching Tomorrow Today: A guide to Futuristics. Bantam Books Inc., New York, N.Y., 1975, p. 3.

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1977-78 DPI ENERGY AVAILABILITY/NEEDS SURVEY OF SECONDARY SCIENCE, SOCIAL STUDIES, INDUSTRIAL ARTS, HOME ECONOMICS TEACHERS[a]

Using the scale below, teachers rated the availability and perceived needs of energy materials for their energy programs.

1	2	3	4	5
None	Very Little	Some	Quite a Bit	A Great Deal

Items	Availability (A)	Valid Cases	Needs (N)	Valid Cases	Difference (N-A)	Valid[b] Cases
1. Basic Energy Concepts						
a. Energy Forms						
- Composite	2.932	265	3.409	259	0.466	253
- Home Ec.	2.768	56	3.269	52	0.501	51
- Science	3.259	104	3.529	104	0.270	102
- Ind. Arts	2.750	36	3.500	36	0.750	35
- Soc. Studies	2.729	59	3.241	58	0.512	57
School Dist. Size 1	2.943	35	3.303	33	0.360	32
School Dist. Size 2	2.896	29	3.517	29	0.621	29
School Dist. Size 3	3.303	33	3.438	32	0.135	32
School Dist. Size 4	3.167	18	3.375	16	0.208	16
School Dist. Size 5	3.059	17	3.800	15	0.741	14
School Dist. Size 6	2.917	24	3.667	24	0.750	24
School Dist. Size 7	2.788	80	3.333	84	0.545	80
Private Schools	2.091	11	3.200	10	1.109[c]	10
b. Energy Uses						
- Composite	2.912	262	3.457	254	0.546	249
- Home Ec.	2.927	55	3.392	51	0.465	50
- Science	3.108	102	3.580	100	0.472	98
- Ind. Arts	2.861	36	3.500	36	0.639	35
- Soc. Studies	2.712	59	3.293	58	0.581	57
School Dist. Size 1	3.000	35	3.438	32	0.438	31
School Dist. Size 2	2.828	29	3.517	29	0.689	29
School Dist. Size 3	3.290	31	3.387	31	0.097	31
School Dist. Size 4	3.000	18	3.412	17	0.412	16
School Dist. Size 5	3.176	17	4.071	14	0.895	13
School Dist. Size 6	2.917	24	3.792	24	0.875	24
School Dist. Size 7	2.788	80	3.400	80	0.612	77
Private Schools	2.000	11	3.000	10	1.000[c]	10

Items	Availability (A)	Valid Cases	Needs (N)	Valid Cases	Difference (N-A)	Valid[b] Cases
2. Energy Systems						
a. Energy Flow						
- Composite	2.378	246	3.167	245	0.774	235
- Home Ec.	2.157	51	2.860	50	0.703	47
- Science	2.571	98	3.402	97	0.831	94
- Ind. Arts	2.333	33	3.000	34	0.667	32
- Soc. Studies	2.278	54	3.182	55	0.904	53
School Dist. Size 1	2.125	32	3.129	31	1.004[c]	29
School Dist. Size 2	2.429	28	3.241	29	0.812	28
School Dist. Size 3	2.813	32	2.938	32	0.125	32
School Dist. Size 4	2.177	17	2.933	15	0.756	15
School Dist. Size 5	2.235	17	3.800	15	1.565[c]	14
School Dist. Size 6	2.227	22	3.227	22	1.000[c]	22
School Dist. Size 7	2.347	72	3.105	76	0.758	71
Private Schools	2.364	11	3.364	11	1.000	11
b. Energy Demand						
- Composite	2.560	250	3.411	248	0.874	239
- Home Ec.	2.373	51	3.200	50	0.827	47
- Science	2.690	100	3.626	99	0.936	96
- Ind. Arts	2.455	33	3.000	36	0.545	33
- Soc. Studies	2.661	56	3.455	55	0.794	54
School Dist. Size 1	2.353	34	3.353	34	1.000[c]	32
School Dist. Size 2	2.482	27	3.357	28	0.875	27
School Dist. Size 3	2.879	33	3.242	33	0.363	33
School Dist. Size 4	2.647	17	3.063	16	0.416	16
School Dist. Size 5	2.412	17	4.067	15	1.655[c]	14
School Dist. Size 6	2.410	22	3.636	22	1.226[c]	22
School Dist. Size 7	2.581	74	3.395	76	0.814	72
Private Schools	2.091	11	2.900	10	0.809	10
c. Present Supplies						
- Composite	2.536	252	3.378	246	0.858	240
- Home Ec.	2.392	51	3.184	49	0.792	48
- Science	2.574	101	3.596	99	1.022	98
- Ind. Arts	2.412	34	3.000	34	0.588	33
- Soc. Studies	2.768	56	3.418	55	0.650	54
School Dist. Size 1	2.200	35	3.147	34	0.941	32
School Dist. Size 2	2.370	27	3.464	28	1.093	27
School Dist. Size 3	2.848	33	3.181	33	0.334	33
School Dist. Size 4	2.588	17	3.313	16	0.725	16
School Dist. Size 5	2.471	17	4.000	15	1.529[c]	14
School Dist. Size 6	2.174	23	3.435	23	1.261[c]	23
School Dist. Size 7	2.662	74	3.293	75	0.631	72
Private Schools	1.818	11	2.900	10	1.082	10

Items	Availability (A)	Valid Cases	Needs (N)	Valid Cases	Difference (N-A)	Valid[b] Cases
d. Distribution						
- Composite	2.313	252	3.173	248	0.867	241
- Home Ec.	2.157	51	2.816	49	0.659	47
- Science	2.376	101	3.394	99	1.018[c]	97
- Ind. Arts	2.235	34	2.824	34	0.589	33
- Soc. Studies	2.482	56	3.298	57	0.816	55
School Dist. Size 1	2.177	34	3.065	31	0.888	30
School Dist. Size 2	2.222	27	3.179	28	0.957	27
School Dist. Size 3	2.606	33	2.970	33	0.364	33
School Dist. Size 4	2.412	17	3.000	16	0.588	16
School Dist. Size 5	2.278	18	4.000	15	1.722[c]	15
School Dist. Size 6	1.957	23	3.174	23	1.217[c]	23
School Dist. Size 7	2.311	74	3.143	77	0.832	73
Private Schools	1.636	11	2.900	10	1.264[c]	10
e. Future Systems						
- Composite	2.398	249	3.681	248	1.297[c]	239
- Home Ec.	2.294	51	3.306	49	1.012[c]	47
- Science	2.441	102	3.900	100	1.459[c]	98
- Ind. Arts	2.438	32	3.647	34	1.209[c]	32
- Soc. Studies	2.455	55	3.712	56	1.259[c]	54
School Dist. Size 1	2.273	33	3.750	32	1.477[c]	30
School Dist. Size 2	2.370	27	3.821	28	1.451[c]	27
School Dist. Size 3	2.727	33	3.515	33	0.788	33
School Dist. Size 4	2.313	16	3.200	15	0.887	15
School Dist. Size 5	2.444	18	4.250	16	1.806[c]	15
School Dist. Size 6	2.217	23	3.826	23	1.609[c]	23
School Dist. Size 7	2.375	72	3.592	76	1.217[c]	71
Private Schools	1.636	11	3.200	32	1.564[c]	10
3. Energy Conversion Technology						
a. Solar						
- Composite	2.329	258	3.695	256	1.399[c]	248
- Home Ec.	2.167	54	3.314	51	1.147[c]	49
- Science	2.505	103	4.010	100	1.505[c]	99
- Ind. Arts	2.371	35	3.500	38	1.129[c]	35
- Soc. Studies	2.268	56	3.597	57	1.329[c]	55
School Dist. Size 1	2.212	33	3.875	32	1.655[c]	30
School Dist. Size 2	2.444	27	3.852	27	1.408[c]	27
School Dist. Size 3	2.588	34	3.606	33	1.018[c]	33
School Dist. Size 4	2.167	18	3.611	18	1.444[c]	18
School Dist. Size 5	2.211	19	3.933	15	1.722[c]	15
School Dist. Size 6	2.417	24	3.833	24	1.416[c]	24
School Dist. Size 7	2.303	76	3.543	81	1.240[c]	75
Private Schools	1.455	11	3.455	11	2.000[c]	11

Items	Availability (A)	Valid Cases	Needs (N)	Valid Cases	Difference (N-A)	Valid[b] Cases
b. Nuclear						
- Composite	2.289	253	3.295	251	1.045[c]	243
- Home Ec.	1.706	51	2.633	49	0.927	47
- Science	2.592	103	3.696	102	1.104[c]	101
- Ind. Arts	2.265	34	2.889	36	0.624	34
- Soc. Studies	2.327	55	3.375	56	1.048[c]	54
School Dist. Size 1	2.091	33	3.455	33	1.364[c]	30
School Dist. Size 2	2.296	27	3.529	27	0.963	27
School Dist. Size 3	2.485	33	3.273	33	0.788	33
School Dist. Size 4	2.125	16	3.059	17	0.934	16
School Dist. Size 5	2.158	19	3.600	15	1.442[c]	15
School Dist. Size 6	2.435	23	3.522	23	1.087[c]	23
School Dist. Size 7	2.280	75	3.154	78	0.874	74
Private Schools	1.818	20	2.800		0.982	10
c. Research & Dev.						
- Composite	1.996	247	3.350	246	1.374[c]	238
- Home Ec.	1.640	50	2.688	48	1.048[c]	46
- Science	2.150	100	3.737	99	1.587[c]	97
- Ind. Arts	1.970	33	3.235	34	1.265[c]	32
- Soc. Studies	2.073	55	3.340	56	1.266[c]	54
School Dist. Size 1	1.844	32	3.500	32	1.656[c]	29
School Dist. Size 2	2.148	27	3.556	27	1.408[c]	27
School Dist. Size 3	2.364	33	3.394	33	1.030[c]	33
School Dist. Size 4	1.688	16	3.294	17	1.606[c]	16
School Dist. Size 5	1.556	18	3.600	15	2.044[c]	15
School Dist. Size 6	2.045	22	3.818	22	1.773[c]	22
School Dist. Size 7	1.986	73	3.026	76	1.040[c]	72
Private Schools	1.545	11	2.800	10	1.255[c]	10
d. Fossil Fuel						
- Composite	2.271	251	3.159	245	0.912	240
- Home Ec.	1.680	50	2.532	47	0.852	46
- Science	2.520	102	3.545	99	1.025[c]	98
- Ind. Arts	2.429	35	3.000	35	0.571	34
- Soc. Studies	2.232	56	3.148	54	0.916	53
School Dist. Size 1	2.200	35	3.387	31	1.187[c]	31
School Dist. Size 2	2.907	27	3.185	27	0.778	27
School Dist. Size 3	2.424	33	3.091	33	0.667	33
School Dist. Size 4	2.125	16	2.882	17	0.757	16
School Dist. Size 5	1.944	18	3.429	14	1.485[c]	14
School Dist. Size 6	2.261	23	3.261	23	1.000[c]	23
School Dist. Size 7	2.297	74	3.013	77	0.716	73
Private Schools	1.727	11	2.900	10	1.173[c]	10

Items	Availability (A)	Valid Cases	Needs (N)	Valid Cases	Difference (N-A)	Valid[b] Cases
e. Bio-Energy						
- Composite	1.815	248	3.221	244	1.431[c]	239
- Home Ec.	1.620	50	2.367	49	0.747	48
- Science	1.911	101	3.644	101	1.733[c]	100
- Ind. Arts	1.750	32	3.061	33	1.311[c]	32
- Soc. Studies	1.910	55	3.010	55	1.181[c]	54
School Dist. Size 1	1.849	33	3.000	30	1.151[c]	30
School Dist. Size 2	1.926	27	3.185	27	1.259[c]	27
School Dist. Size 3	2.061	33	3.303	33	1.242[c]	33
School Dist. Size 4	1.625	16	3.118	17	1.493[c]	16
School Dist. Size 5	1.737	19	3.188	16	1.451[c]	15
School Dist. Size 6	1.435	23	3.348	23	1.913[c]	23
School Dist. Size 7	1.806	72	3.160	75	1.354[c]	71
Private Schools	1.364	11	3.100	10	1.736[c]	10
f. Hydrocarbon Fuel						
- Composite	1.980	249	3.143	245	1.180[c]	239
- Home Ec.	1.600	50	2.396	48	0.796	46
- Science	2.216	102	3.535	99	1.319[c]	98
- Ind. Arts	2.031	32	2.970	33	0.939	32
- Soc. Studies	1.927	55	3.107	56	1.180[c]	54
School Dist. Size 1	2.176	34	3.281	32	1.105[c]	31
School Dist. Size 2	2.000	27	3.074	27	1.074[c]	27
School Dist. Size 3	2.212	33	3.303	33	1.091[c]	33
School Dist. Size 4	1.867	15	2.938	16	1.071[c]	15
School Dist. Size 5	1.842	19	3.067	15	1.225[c]	15
School Dist. Size 6	1.739	23	3.348	23	1.609[c]	23
School Dist. Size 7	1.945	73	2.921	76	0.976	72
Private Schools	1.455	11	3.300	10	1.845[c]	10
g. Wind						
- Composite	2.100	250	3.359	248	1.283[c]	240
- Home Ec.	1.700	50	2.521	48	0.821	46
- Science	2.216	102	3.798	99	1.582[c]	98
- Ind. Arts	2.152	33	3.194	36	1.042[c]	33
- Soc. Studies	2.273	55	3.500	56	1.227[c]	54
School Dist. Size 1	2.063	32	3.548	31	1.485[c]	29
School Dist. Size 2	2.111	27	3.296	27	1.185[c]	27
School Dist. Size 3	2.273	33	3.394	33	1.121[c]	33
School Dist. Size 4	1.938	16	3.294	17	1.356[c]	16
School Dist. Size 5	2.000	19	3.733	15	1.733[c]	15
School Dist. Size 6	1.870	23	3.435	23	1.565[c]	23
School Dist. Size 7	2.122	74	3.205	78	1.083[c]	73
Private Schools	1.636	11	2.900	10	1.264[c]	10

Items	Availability (A)	Valid Cases	Needs (N)	Valid Cases	Difference (N-A)	Valid[b] Cases
h. Geothermal						
- Composite	1.892	249	3.590	245	1.298[c]	238
- Home Ec.	1.600	50	2.458	48	0.858	46
- Science	2.089	101	3.622	98	1.533[c]	97
- Ind. Arts	1.853	34	2.771	35	0.918	34
- Soc. Studies	1.907	54	3.164	55	1.257[c]	52
School Dist. Size 1	1.697	33	3.000	32	1.303[c]	30
School Dist. Size 2	2.074	27	3.346	26	1.272[c]	26
School Dist. Size 3	2.121	33	3.212	33	1.091[c]	33
School Dist. Size 4	1.750	16	3.059	17	1.309[c]	16
School Dist. Size 5	1.790	19	3.333	15	1.543[c]	15
School Dist. Size 6	1.696	23	3.348	23	1.652[c]	23
School Dist. Size 7	1.918	73	2.987	77	1.069[c]	72
Private Schools	1.273	11	3.000	10	1.727[c]	10
i. Tidal						
- Composite	1.748	250	3.040	247	1.317[c]	240
- Home Ec.	1.540	50	2.208	48	0.668	46
- Science	1.881	101	3.434	99	1.553[c]	97
- Ind. Arts	1.758	33	2.706	34	0.948	33
- Soc. Studies	1.750	56	3.193	57	1.443[c]	55
School Dist. Size 1	1.606	33	2.969	32	1.363[c]	30
School Dist. Size 2	1.926	27	3.148	27	1.222[c]	27
School Dist. Size 3	1.848	33	2.969	33	1.122[c]	33
School Dist. Size 4	1.438	16	2.941	17	1.503[c]	16
School Dist. Size 5	1.737	19	3.333	15	1.596[c]	15
School Dist. Size 6	1.522	23	3.043	23	1.521[c]	23
School Dist. Size 7	1.851	74	2.935	77	1.084[c]	73
Private Schools	1.273	11	3.100	10	1.827[c]	10
j. Wave Action						
- Composite	1.735	249	3.020	245	1.297[c]	239
- Home Ec.	1.490	51	2.188	48	0.698	47
- Science	1.901	101	3.444	99	1.543[c]	97
- Ind. Arts	1.688	32	2.697	33	1.009[c]	32
- Soc. Studies	1.709	55	3.107	56	1.398[c]	54
School Dist. Size 1	1.625	32	3.000	31	1.375[c]	29
School Dist. Size 2	1.852	27	3.148	27	1.296[c]	27
School Dist. Size 3	1.818	33	2.970	33	1.152[c]	33
School Dist. Size 4	1.375	16	2.882	17	1.507[c]	16
School Dist. Size 5	1.737	19	3.125	16	1.388[c]	16
School Dist. Size 6	1.870	23	3.130	23	1.260[c]	23
School Dist. Size 7	1.743	74	2.829	76	1.086[c]	74
Private Schools	1.454	11	3.100	10	1.646[c]	10

Items	Availability (A)	Valid Cases	Needs (N)	Valid Cases	Difference (N-A)	Valid[b] Cases
k. Ocean Thermal Gradient						
- Composite	1.650	246	2.946	242	1.305[c]	236
- Home Ec.	1.500	50	2.146	48	0.646	47
- Science	1.707	99	3.306	98	1.599[c]	96
- Ind. Arts	1.625	32	2.576	33	0.951	32
- Soc. Studies	1.745	55	3.109	55	1.364[c]	54
School Dist. Size 1	1.656	32	2.867	30	1.211[c]	29
School Dist. Size 2	1.852	27	3.037	27	1.185[c]	27
School Dist. Size 3	1.818	33	2.940	33	1.121[c]	33
School Dist. Size 4	1.688	16	2.941	17	1.253[c]	16
School Dist. Size 5	1.611	18	3.200	15	1.589[c]	15
School Dist. Size 6	1.478	23	2.909	22	1.431[c]	22
School Dist. Size 7	1.583	72	2.776	76	1.193[c]	71
Private Schools	1.273	11	3.000	10	1.727	10
l. Other Energy Sources						
- Composite	1.928	223	3.140	215	1.234[c]	209
- Home Ec.	1.511	47	2.200	45	0.689	43
- Science	2.022	90	3.528	89	1.506[c]	88
- Ind. Arts	2.000	31	2.967	30	0.967	30
- Soc. Studies	2.106	47	3.196	46	1.089[c]	45
School Dist. Size 1	1.679	28	2.960	25	1.281[c]	25
School Dist. Size 2	2.000	24	3.292	24	1.292[c]	24
School Dist. Size 3	2.194	31	2.931	29	0.737	29
School Dist. Size 4	2.000	15	3.063	16	1.063[c]	15
School Dist. Size 5	1.933	15	3.667	12	1.734[c]	12
School Dist. Size 6	1.727	22	3.318	22	1.591[c]	22
School Dist. Size 7	1.803	66	2.969	65	1.166	62
Private Schools	1.600	10	2.889	9	1.289[c]	9
4. Energy Conservation Areas						
a. Residential						
- Composite	2.621	261	3.762	252	1.137[c]	248
- Home Ec.	2.825	57	4.000	52	1.175[c]	51
- Science	2.614	101	3.733	101	1.119[c]	99
- Ind. Arts	2.629	35	3.647	34	1.018[c]	33
- Soc. Studies	2.475	59	3.750	56	1.275[c]	56
School Dist. Size 1	2.394	33	3.800	30	1.406[c]	30
School Dist. Size 2	2.724	29	4.033	29	1.310[c]	29
School Dist. Size 3	2.970	33	3.688	32	0.718	32
School Dist. Size 4	3.056	18	3.706	17	0.650	17
School Dist. Size 5	2.471	17	4.067	15	1.596[c]	15
School Dist. Size 6	2.083	24	3.667	24	1.584[c]	24
School Dist. Size 7	2.617	81	3.691	81	1.074[c]	80
Private Schools	1.909	11	2.900	10	0.991	10

Items	Availability (A)	Valid Cases	Needs (N)	Valid Cases	Difference (N-A)	Valid[b] Cases
b. Transportation						
- Composite	2.470	253	3.632	250	1.161[c]	242
- Home Ec.	2.180	50	3.260	50	1.080[c]	46
- Science	2.577	104	3.760	104	1.183[c]	102
- Ind. Arts	2.455	33	3.485	33	1.030[c]	32
- Soc. Studies	2.625	56	3.764	55	1.139[c]	54
School Dist. Size 1	2.382	34	3.710	31	1.328[c]	31
School Dist. Size 2	2.577	26	3.963	27	1.386[c]	26
School Dist. Size 3	2.667	33	3.406	32	0.739	32
School Dist. Size 4	2.688	16	3.412	17	0.724	16
School Dist. Size 5	2.333	18	4.00C	16	1.667[c]	15
School Dist. Size 6	2.174	23	3.565	23	1.391[c]	23
School Dist. Size 7	2.429	77	3.500	80	1.071[c]	75
Private Schools	1.818	11	3.200	10	1.382	10
c. Industrial						
- Composite	2.209	249	3.455	246	1.238[c]	239
- Home Ec.	1.880	50	2.625	48	0.745	46
- Science	2.307	101	3.663	101	1.356[c]	99
- Ind. Arts	2.212	33	3.394	33	1.184[c]	32
- Soc. Studies	2.400	55	3.607	56	1.207[c]	54
School Dist. Size 1	2.059	34	3.194	31	1.135[c]	31
School Dist. Size 2	2.259	27	3.667	27	1.408[c]	27
School Dist. Size 3	2.333	33	3.188	32	0.855[c]	32
School Dist. Size 4	2.438	16	3.235	17	0.797	16
School Dist. Size 5	2.235	17	4.067	16	1.832[c]	14
School Dist. Size 6	1.917	24	3.500	24	1.583[c]	24
School Dist. Size 7	2.219	73	3.403	77	1.184[c]	72
Private Schools	1.636	11	3.400	10	1.764	10
d. Institutional						
- Composite	2.135	245	3.324	244	1.216[c]	236
- Home Ec.	1.960	50	2.872	47	0.912	45
- Science	2.250	100	3.510	100	1.260	98
- Ind. Arts	2.000	30	2.969	32	0.969	30
- Soc. Studies	2.236	55	3.536	56	1.299[c]	54
School Dist. Size 1	1.938	32	3.200	30	1.262[c]	29
School Dist. Size 2	2.259	27	3.778	27	1.519[c]	27
School Dist. Size 3	2.273	33	3.094	32	0.821	32
School Dist. Size 4	2.438	16	3.118	17	0.680	16
School Dist. Size 5	2.118	17	3.867	15	1.749[c]	14
School Dist. Size 6	1.783	23	3.391	23	1.608[c]	23
School Dist. Size 7	2.139	72	3.143	77	1.004[c]	72
Private Schools	1.545	11	3.200	10	1.655[c]	10

Items	Availability (A)	Valid Cases	Needs (N)	Valid Cases	Difference (N-A)	Valid[b] Cases
e. Commercial						
- Composite	2.102	244	3.304	240	1.214[c]	234
- Home Ec.	1.800	50	2.681	47	0.881	45
- Science	2.172	99	3.515	99	1.343[c]	97
- Ind. Arts	2.194	31	2.969	32	0.775	31
- Soc. Studies	2.315	54	3.556	54	1.241[c]	53
School Dist. Size 1	1.906	32	3.034	29	1.128[c]	29
School Dist. Size 2	2.185	27	3.852	27	1.667[c]	27
School Dist. Size 3	2.242	33	3.097	31	0.855	31
School Dist. Size 4	2.563	16	3.059	17	0.496	16
School Dist. Size 5	2.125	16	3.786	14	1.661[c]	14
School Dist. Size 6	1.783	23	3.304	23	1.521[c]	23
School Dist. Size 7	2.069	72	3.171	76	1.102[c]	72
Private Schools	1.364	11	3.200	10	1.836	10
5. Political/Social Aspects of Energy Problems						
a. Value Decisions						
- Composite	2.245	249	3.642	246	1.414[c]	237
- Home Ec.	2.245	53	3.708	48	1.463[c]	47
- Science	2.134	97	3.632	95	1.498[c]	92
- Ind. Arts	1.906	32	3.118	34	1.212[c]	32
- Soc. Studies	2.621	58	3.917	60	1.296[c]	57
School Dist. Size 1	2.030	33	3.633	30	1.603[c]	29
School Dist. Size 2	2.607	28	3.714	28	1.107[c]	28
School Dist. Size 3	2.364	33	3.424	33	1.060[c]	32
School Dist. Size 4	2.529	17	3.235	17	0.706	16
School Dist. Size 5	1.941	17	3.933	15	1.992[c]	14
School Dist. Size 6	1.864	22	3.591	22	1.727[c]	22
School Dist. Size 7	2.173	75	3.718	78	1.545[c]	73
Private Schools	1.818	11	3.200	10	1.382	10
b. Trade-offs						
- Composite	1.950	239	3.280	236	1.346[c]	228
- Home Ec.	1.667	48	2.822	45	1.155[c]	43
- Science	1.947	95	3.387	93	1.440[c]	91
- Ind. Arts	1.903	31	2.970	33	1.067[c]	32
- Soc. Studies	2.214	56	3.579	57	1.365[c]	55
School Dist. Size 1	1.844	32	3.200	30	1.356[c]	29
School Dist. Size 2	2.154	26	3.385	26	1.231[c]	26
School Dist. Size 3	2.250	32	3.032	31	0.782	31
School Dist. Size 4	1.733	15	2.688	16	0.955	14
School Dist. Size 5	1.800	15	3.929	14	2.129[c]	13
School Dist. Size 6	1.636	22	3.048	21	1.412[c]	21
School Dist. Size 7	1.903	72	3.316	76	1.413[c]	71
Private Schools	1.636	11	3.000	10	1.364[c]	10

Items	Availability (A)	Valid Cases	Needs (N)	Valid Cases	Difference (N-A)	Valid[b] Cases
c. Energy Legislation						
- Composite	2.133	243	3.461	243	1.322[c]	236
- Home Ec.	1.878	49	2.957	46	1.079[c]	44
- Science	2.061	98	3.515	97	1.454[c]	96
- Ind. Arts	2.031	32	3.147	34	1.116[c]	32
- Soc. Studies	2.533	60	3.948	58	1.415[c]	57
School Dist. Size 1	1.939	33	3.500	32	1.561[c]	30
School Dist. Size 2	2.222	27	3.407	27	1.185[c]	27
School Dist. Size 3	2.242	33	3.125	32	0.883	32
School Dist. Size 4	2.250	16	3.063	16	0.813	15
School Dist. Size 5	2.059	17	4.000	15	1.941[c]	15
School Dist. Size 6	1.045	22	3.500	22	2.455[c]	22
School Dist. Size 7	2.189	74	2.974	76	0.785	73
Private Schools	1.910	11	2.800	10	0.890	10
d. Life-Styles						
- Composite	2.305	249	3.667	243	1.388[c]	237
- Home Ec.	2.415	53	3.708	48	1.293[c]	47
- Science	2.063	98	3.663	95	1.500[c]	95
- Ind. Arts	2.063	32	3.257	35	1.194[c]	33
- Soc. Studies	2.534	58	3.850	60	1.307[c]	57
School Dist. Size 1	2.188	32	3.677	31	1.489[c]	29
School Dist. Size 2	1.789	28	4.036	28	2.247[c]	28
School Dist. Size 3	2.515	33	3.281	32	0.766	32
School Dist. Size 4	2.529	17	3.117	17	0.588	16
School Dist. Size 5	2.235	17	4.133	15	1.898[c]	14
School Dist. Size 6	1.864	22	3.682	22	1.818[c]	22
School Dist. Size 7	2.280	75	3.633	79	1.353[c]	74
Private Schools	1.909	11	3.100	10	1.191[c]	10
e. Conservation Practices						
- Composite	2.673	254	3.890	246	1.237[c]	241
- Home Ec.	2.741	54	4.041	49	1.300[c]	48
- Science	2.657	99	3.878	98	1.221[c]	106
- Ind. Arts	2.406	32	3.364	33	0.958	32
- Soc. Studies	2.767	60	4.052	58	1.285[c]	57
School Dist. Size 1	2.844	32	3.967	30	1.123[c]	29
School Dist. Size 2	2.714	28	4.071	28	1.357[c]	28
School Dist. Size 3	2.970	33	3.563	32	0.593	32
School Dist. Size 4	2.722	18	3.563	16	0.841	16
School Dist. Size 5	2.500	18	4.188	16	1.688[c]	15
School Dist. Size 6	2.174	23	3.870	23	1.696[c]	23
School Dist. Size 7	2.628	78	3.911	79	1.283	76
Private Schools	2.273	11	3.300	10	1.027[c]	10

Using the scale below, teachers rated general educational resources for their effectiveness in meeting the needs of their energy programs.

1	2	3	4	5
None	Very Little	Some	Quite a Bit	A Great Deal

Item	Respondent				
	Composite	Home Ec.	Science	Ind. Arts	Soc. Studies
6. Energy Resources Effectiveness rated by disciplines					
a. Books					
- Effectiveness (Mean)	2.963	2.500	3.029[C]	3.235[C]	3.033[C]
- Valid Cases	268	58	105	34	60
b. A.V.					
- Effectiveness (Mean)	3.498[C]	3.368[C]	3.514[C]	3.500[C]	3.550[C]
- Valid Cases	267	57	105	34	60
c. Public T.V.					
- Effectiveness (Mean)	2.969	2.821	3.078[C]	2.667	3.220[C]
- Valid Cases	257	56	102	30	59
d. DOE Publications					
- Effectiveness (Mean)	2.621	2.679	2.750	2.387	2.554
- Valid Cases	253	56	100	31	56
e. Commercial Kits					
- Effectiveness (Mean)	2.400	2.500	2.340	2.281	2.466
- Valid Cases	255	56	100	32	58
f. Case Studies					
- Effectiveness (Mean)	2.159	2.304	2.000	1.800	2.483
- Valid Cases	251	56	98	30	58
g. Lab Experiments					
- Effectiveness (Mean)	2.533	2.200	2.794	3.129[C]	2.053
- Valid Cases	255	55	102	31	57
h. Newspapers					
- Effectiveness (Mean)	3.212[C]	3.088[C]	3.175[C]	2.939	3.574[C]
- Valid Cases	264	57	103	33	61

Item	Respondent: Composite	Home Ec.	Science	Ind. Arts	Soc. Studies
i. Public Utility Pamphlet					
- Effectiveness (Mean)	2.660	2.839	2.713	2.267	2.678
- Valid Cases	256	56	101	30	59
j. Library Materials					
- Effectiveness (Mean)	3.035[C]	2.857	3.109[C]	2.938	3.217[C]
- Valid Cases	259	56	101	32	60
k. University Programs					
- Effectiveness (Mean)	2.256	2.273	2.263	2.286	2.196
- Valid Cases	246	55	99	28	56
l. Other Energy Units					
- Effectiveness (Mean)	2.257	2.140	2.211	2.115	2.581
- Valid Cases	210	43	90	26	43

Item	School District Size: 1	2	3	4	5	6	7	Private
6. Energy Resources Effectiveness Rated by School District Size								
a. Books								
- Effectiveness (Mean)	2.833	2.929	3.061[C]	2.889	2.900	3.000[C]	2.840	3.545[C]
- Valid Cases	36	28	33	18	20	24	81	11
b. A.V.								
- Effectiveness (Mean)	3.432[C]	3.500[C]	3.344[C]	3.111[C]	3.300[C]	3.708[C]	3.519[C]	3.727[C]
- Valid Cases	37	28	32	18	20	24	81	11
c. Public T.V.								
- Effectiveness (Mean)	2.806	2.929	3.219[C]	2.941	3.000[C]	3.478[C]	2.821	2.100
- Valid Cases	36	28	32	17	18	23	78	10
d. DOE Publications								
- Effectiveness (Mean)	2.457	2.464	2.781	2.556	2.889	3.000[C]	2.421	2.100
- Valid Cases	35	28	32	18	18	23	76	10

Item	School District Size 1	2	3	4	5	6	7	Private
e. Commercial Kits								
- Effectiveness (Mean)	2.222	2.464	2.194	2.278	2.647	2.870	2.291	1.800
- Valid Cases	36	28	31	18	17	23	79	10
f. Case Studies								
- Effectiveness (Mean)	1.943	2.250	2.032	1.944	2.412	2.364	2.171	1.900
- Valid Cases	35	28	31	18	17	22	76	10
g. Lab Experiments								
- Effectiveness (Mean)	2.333	2.593	2.613	2.059	2.722	2.826	2.443	2.600
- Valid Cases	36	27	31	17	18	23	79	10
h. Newspapers								
- Effectiveness (Mean)	3.243[C]	2.857	3.333[C]	3.167[C]	3.056[C]	3.500[C]	3.156[C]	3.000[C]
- Valid Cases	37	28	33	18	18	24	81	10
i. Public Utility Pamphlet								
- Effectiveness (Mean)	2.472	2.185	2.594	3.167[C]	2.722	2.913	2.628	2.200
- Valid Cases	36	27	32	18	18	23	78	10
j. Library Materials								
- Effectivenes (Mean)	2.861	2.714	3.188[C]	3.167[C]	2.875	2.958	3.134[C]	2.500
- Valid Cases	36	28	32	18	16	24	80	10
k. University Programs								
- Effectiveness (Mean)	2.344	2.077	2.313	2.556	2.333	2.391	2.120	2.111
- Valid Cases	32	26	32	18	15	23	75	9
l. Other Energy Units								
- Effectiveness (Mean)	1.875	2.500	2.300	2.133	2.500	2.222	2.031	1.889
- Valid Cases	32	22	30	15	14	18	64	9

Item	Frequency				
	Composite	Home Ec.	Science	Ind. Arts	Soc. Studies
7. Other Energy Sources Considered Useful by Discipline					
1. Federal Publications	19	2	11	2	3
2. State Publications	10	2	6	0	1
3. Subject Area Publications	8	1	5	1	1
4. Library Materials	4	2	1	0	0
5. Public Utility Co. Materials & Speakers	17	8	3	1	4
6. Other Commercially Produced Materials	24	2	16	1	5
7. Student Project Materials	7	2	4	0	1
8. Newspapers	20	5	4	3	7
9. Magazines	15	3	7	0	5
10. Case Studies	5	3	0	0	1
11. Public T.V.	7	0	4	0	3
12. Commercial T.V.	10	2	2	2	3
13. Films	36	7	16	3	8
14. Seminars/Workshop	21	10	9	2	0
15. Textbooks	9	1	4	1	2
Valid Cases	210	63	107	39	63

Item	School District Size							
	1	2	3	4	5	6	7	Private
7. Other Energy Sources Considered Useful by School District Size								
1. Federal Publications	1	2	3	0	2	4	5	3
2. State Publications	0	1	2	1	1	0	3	1
3. Subject Area Publications	2	0	2	0	0	2	2	0
4. Library Materials	0	0	0	1	0	1	1	1
5. Public Utility Co. Materials & Speakers	0	1	4	2	1	0	8	1
6. Other Commercially Produced Materials	2	2	4	2	1	3	8	2
7. Student Project Materials	2	0	2	0	1	0	3	0
8. Newspapers	1	3	3	1	1	3	5	1
9. Magazines	4	1	2	0	1	0	3	3
10. Case Studies	0	0	1	0	0	1	1	2
11. Public T.V.	0	1	0	1	0	1	3	1
12. Commercial T.V.	2	0	3	0	0	0	4	1

Item	School District Size 1	2	3	4	5	6	7	Private
13. Films	7	2	4	1	3	5	9	5
14. Seminars/Workshops	3	4	3	1	2	3	4	1
15. Textbooks	3	0	0	1	0	0	3	2
Valid Cases	65	66	63	54	39	45	110	58

Using the scale below, teachers rated supplementary materials according to the desirability of format.

1	2	3	4	5
None	Very Little	Some	Quite a Bit	A Great Deal

Item	Discipline Composite	Home Ec.	Science	Ind. Arts	Soc. Studies	Private
8. Written Materials Format Desirability Rated by Disciplines						
a. Concept, Objective, Activities Guide						
- Desirability (Mean)	3.172[c]	2.845	3.263[c]	2.630	2.793	3.444[c]
- Valid Cases	233	58	95	27	55	9
b. Publisher Materials						
- Desirability (Mean)	3.000[c]	2.960	3.078[c]	2.862	2.804	3.000[c]
- Valid Cases	234	50	90	29	56	9
c. Case Studies						
- Desirability (Mean)	2.737	2.981	2.362	2.519	2.732	2.889
- Valid Cases	228	52	94	27	56	9
d. Other						
- Desirability (Mean)	2.393	2.889	2.316	2.000	2.684	1.000
- Valid Cases	61	9	19	13	19	1

Item	School District Size 1	2	3	4	5	6	7
8. Written Materials Format Desirability Rated by School District Size							
a. Concept, Objective, Activities Guide							
- Desirability (Mean)	3.172[c]	3.250[c]	3.000[c]	3.444[c]	2.944	3.350[c]	2.957
- Valid Cases	29	24	31	18	18	20	70
b. Publisher Materials							
- Desirability (Mean)	3.300[c]	3.200[c]	2.800	2.833	2.733	3.200[c]	2.875
- Valid Cases	30	25	30	18	15	20	72
c. Case Studies							
- Desirability (Mean)	2.833	3.192[c]	2.300	2.333	3.267[c]	3.150[c]	2.522
- Valid Cases	30	26	30	18	15	20	67
d. Other							
- Desirability (Mean)	3.500[c]	3.250[c]	1.571	2.857	2.250	3.000[c]	1.800
- Valid Cases	6	8	7	7	4	3	20

Item	Discipline Composite	Home Ec.	Science	Ind. Arts	Soc. Studies	Private
9. Audiovisual Materials Desirability Format Rated by Discipline						
a. Films						
- Desirability (Mean)	3.723[c]	3.741[c]	3.818[c]	3.500[c]	3.552[c]	4.000[c]
- Valid Cases	253	54	99	32	58	11
b. Film Loops						
- Desirability (Mean)	2.618	2.600	2.688	2.724	2.490	2.182
- Valid Cases	228	45	93	29	51	11
c. Filmstrips						
- Desirability (Mean)	3.049[c]	3.226[c]	3.041[c]	2.821	3.071[c]	2.727
- Valid Cases	246	53	98	28	56	11

Item	Discipline: Composite	Home Ec.	Science	Ind. Arts	Soc. Studies	Private
d. Transparencies						
- Desirability (Mean)	2.988	3.020[c]	2.989	3.097[c]	2.860	3.182[c]
- Valid Cases	244	50	95	31	57	11
e. Cassette Tapes						
- Desirability (Mean)	2.819	3.125[c]	2.863	2.643	2.643	2.182
- Valid Cases	237	48	95	28	56	11
f. Other						
- Desirability (Mean)	2.456	2.167	2.759	1.750	2.333	2.500
- Valid Cases	57	6	29	8	12	2

Item	School District Size: 1	2	3	4	5	6	7
9. Audiovisual Materials Desirability Format Rated by School District Size							
a. Films							
- Desirability (Mean)	3.968[c]	3.885[c]	3.576[c]	3.333[c]	3.421[c]	3.695[c]	3.684[c]
- Valid Cases	31	26	33	18	19	23	76
b. Film Loops							
- Desirability (Mean)	2.741	2.667	2.548	2.286	3.412[c]	2.682	2.471
- Valid Cases	27	24	31	14	17	22	68
c. Filmstrips							
- Desirability (Mean)	3.161[c]	3.240	2.667	2.688	3.000[c]	3.409[c]	3.095[c]
- Valid Cases	31	25	33	16	18	22	74
d. Transparencies							
- Desirability (Mean)	2.938	3.038[c]	2.750	2.933	2.842	3.045[c]	2.973
- Valid Cases	32	26	32	15	19	22	73
e. Cassette Tapes							
- Desirability (Mean)	2.750	3.125[c]	2.344	2.571	3.000[c]	3.045[c]	2.887
- Valid Cases	32	24	32	14	18	22	71
f. Other							
- Desirability (Mean)	2.500	3.600[c]	2.000	1.250	2.500	3.800[c]	2.304
- Valid Cases	6	5	6	4	4	5	23

Item	Discipline: Composite	Home Ec.	Science	Ind. Arts	Soc. Studies	Private
10. Inservice Format Desirability, Rated by Discipline						
a. Summer Programs						
- Desirability (Mean)	2.956	2.881	3.106[c]	2.571	2.904	3.182[c]
- Valid Cases	227	42	94	28	52	11
b. Academic Year						
- Desirability (Mean)	2.749	2.935	2.702	2.690	2.627	3.091[c]
- Valid Cases	231	46	94	29	51	11
c. University/DPI Short Courses						
- Desirability (Mean)	3.109[c]	2.878	3.323[c]	2.833	2.942	2.400
- Valid Cases	229	44	93	30	52	10
d. Other						
- Desirability (Mean)	2.367	3.250[c]	2.474	1.333	2.154	2.333
- Valid Cases	49	8	19	6	13	3

Item	School District Size: 1	2	3	4	5	6	7
10. Inservice Format Desirability, Rated by School District Size							
a. Summer Programs							
- Desirability (Mean)	3.393[c]	3.174[c]	2.767	2.600	2.722	3.238[c]	2.603
- Valid Cases	28	23	30	15	18	21	68
b. Academic Year							
- Desirability (Mean)	2.862	3.520[c]	2.517	2.133	2.333	2.950	2.592
- Valid Cases	29	25	29	15	18	20	71
c. University/DPI Short Courses							
- Desirability (Mean)	3.214[c]	3.304[c]	3.233[c]	2.941	2.941	3.429[c]	2.870
- Valid Cases	28	23	30	17	17	21	69
d. Other							
- Desirability (Mean)	2.800	2.500	2.000	2.000	1.000	3.333[c]	2.190
- Valid Cases	5	2	3	4	2	6	21

11. Additional Comments Concerning Energy Needs

Item	Number of Responses Composite
a. Energy Units or Programs for Instruction	32
b. More Materials	34
c. Resource Handbook for Available Materials	10
d. Values Approach to Energy Issues	9
e. Hands-on Activities	7
f. Energy Workshop	5

a - 700 survey forms were sent to secondary public and private school teachers; 350 were returned; 279 were found valid for compilation.

b - Missing data was not averaged.

c - Response was found adequately significant to merit further investigation, and/or materials development.